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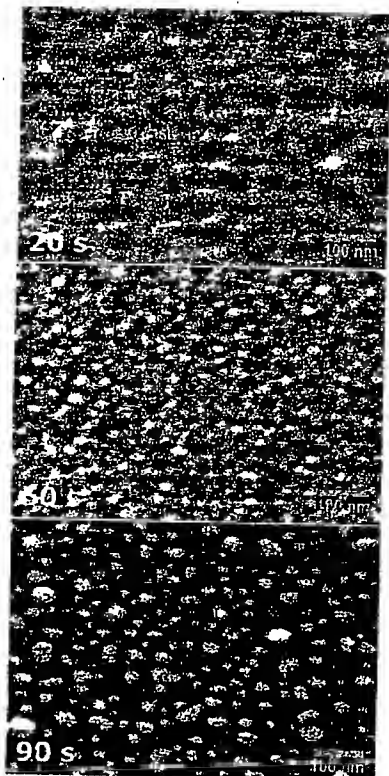
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(54) Title: **NANOPARTICLE COATED NANOSTRUCTURED SURFACES FOR DETECTION, CATALYSIS AND DEVICE APPLICATIONS**



(57) Abstract: A non-vacuum-based, non-collodial chemistry-based method of synthesizing metal nanoparticles and nanoparticle-nanostructured material composites obtained by that method. An embodiment of the method of this invention for fabricating a nanoparticle-nanostructured material composite and synthesizing nanoparticles includes preparing a nanostructured/nanotextured material, and, contacting the nanostructured/nanotextured material with a solution. Nanoparticles are synthesized on the nanostructured/nanotextured material as a result of the contact. The method of the present invention can be utilized to fabricate SPR and SERS substrates for sensing and detection. Additional systems based on this approach (e.g., surface plasmon resonance absorption and alloying sensors and nanocatalysts) are described.

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